

HELI-SHAFT

Abstract

The HELI-SHAFT is comprised of a shaft with two helical and parallel runners cutout along its length. These runners provide both air/fuel intake and exhaust outlet. The intake runner has an opening at the front end of the shaft to provide an inlet for the air/fuel mixture to enter from the intake plenum. At the end of the exhaust runner is an outlet for the exhaust gases to exit the back of the shaft. The shaft provides locations for spark plugs to be inserted and is fitted with a sleeve of the same length to enclose the dual runner system. The sleeve contains port openings located over each intake and exhaust runner positioned to provide alignment with individual engine cylinders matching both the firing order and cycle timing of the engine. Split bearing block inserts mount in the base half and provide a through port opening above each combustion chamber. Self lubricating bearings with ports aligned with the base bearing block insert ports are placed in the bearing blocks and the shaft is inserted through the center of each. The top bearing block inserts and compression seals are enclosed with the top half of the head providing a cover for the

assembly. At the front or intake end of the shaft extends a mounting hub for attaching a V-groove drive pulley. The HELI-SHAFT drive pulley(s) are connected to the crankshaft with a V-groove belt and rotate one half the speed of the crankshaft during operation.